

REMARKS

Claims 30-41 and 43 are presently in the application. Claims 1-29 and 42 have been canceled.

This amendment is presented to simplify the issues on appeal.

The drawings have been objected to as failing to illustrate “said piezoelectric actuator being operable to open and close the opening located in the valve housing proximate the end of the actuator chamber opposite from said one end of the actuator chamber” (claim 43). This language has now been canceled from claim 43. Accordingly, withdrawal of the objection is requested.

Claims 30-41 and 43 have been rejected under 35 USC 112, first paragraph, as failing to comply with the written description requirement. This is a “new matter” rejection. The examiner finds that the language “an opening located in the valve housing proximate an end of the actuator chamber opposite from said one end of the actuator chamber”(claim 43) is unsupported by the original disclosure. This language has now been canceled from claim 43. Accordingly, withdrawal of the rejection is requested.

Claims 30-41 and 43 have been rejected under 35 USC 112, first paragraph, as failing to comply with the enablement requirement. Again, this rejection concerns the language “an opening located in the valve housing proximate an end of the actuator chamber opposite from said one end of the actuator chamber” and also the language “said piezoelectric actuator being operable to open and close the opening located in the valve housing proximate the end of the actuator chamber opposite from said one end of the actuator chamber.” The examiner finds no enabling disclosure for this language. Again, the language has been canceled from claim 43. Thus, this rejection is no longer applicable to the claims and should be withdrawn.

Claims 30-41 and 43 have been rejected under 35 USC 112, second paragraph, as indefinite. The examiner finds the scope and meaning of the claims to be indefinite, because “the actuator recitations cannot be understood.” The examiner has not specified exactly what “actuator recitations” he finds indefinite. It must be presumed that the examiner is again referring to the language “said piezoelectric actuator being operable to open and close the opening located in the valve housing proximate the end of the actuator chamber opposite from said one end of the actuator chamber.” If this is in fact the case, this rejection is also moot because the language has been canceled from claim 43.

As to the recitation in claim 43 of “a piezoelectric actuator comprising a ram and an actuator cap supported in the actuator chamber,” the specification teaches and Figs. 1-3 show “[t]he actuator 30 may be embodied as a piezoelectric actuator unit. The operative principle provides that by means of electrical voltage pulses, which are delivered to the actuator 30 via a cable, changes in length of the ram 31 of the actuator 30 . . .” (Paragraph 25 of applicants’ original specification - emphasis added). The emphasized language unequivocally identifies the illustrated “ram 31” as the element which changes length by means of voltage pulses. The element 31 is illustrated in Figs 2 and 3, as well as, Fig.1. Thus, the examiner’s comment (at page 5) that “the only disclosure of an actuator in the application is with respect to the Prior Art of Fig. 1” is clearly erroneous.

Thus, the only remaining issue on appeal is the rejection of claims 30-41 and 43 under 35 USC 103(a) as unpatentable over Cerny (US 5,288,025) in view of the admitted prior art of applicants’ Fig. 1.

At page 5 of the Final Rejection, the examiner describes Cerny as showing the claimed valve except for a central inlet.

This generalization of the teachings of Cerny is blatantly erroneous. In fact, Cerny does not teach or suggest: (1) a piezoelectric actuator; (2) a cable outlet proximate one end of the actuator chamber; (3) a bore communicating the cable outlet with the actuator chamber; and (4) the bore and cable outlet being sealed off from the actuator chamber when the actuator cap is seated on the conical sealing face.

The examiner uses the admitted prior art of applicants' Fig. 1 for a teaching of a piezoelectric actuator.

The examiner proposes that it would have been obvious to one of ordinary skill in the art to combine the teachings of Cerny with the teachings shown in the admitted prior art of Fig. 1. However, Cerny's invention is concerned with improving the accuracy of fuel delivery to an engine's combustion chamber using a pulse width modulated type fuel injector (see, col. 1, ll. 34-38). Cerny teaches an improved fuel injector for an internal combustion engine which produces highly accurate fuel delivery control by providing a precise closing of the valve without secondary openings caused by rebound or bouncing of the valve from its seat surface after initial closing. Valve rebound is eliminated by a hydraulic cushion formed between parallel surfaces of the movable valve and its stationary guide whereby a thin boundary layer of liquid fuel caught between closely spaced surfaces is compressed just prior to engagement of the valve with its valve seat. This generates an opposing force to the force tending to close the valve. See, Abstract.

In other words, Cerny's teachings are concerned strictly with the end of the fuel injector having the fuel opening 74 leading to the combustion chamber. See, col. 4, ll. 18-20.

Appl. No. 10/574,659
Amdt. dated November 12, 2009
Reply to Final Office action of Aug. 11, 2009

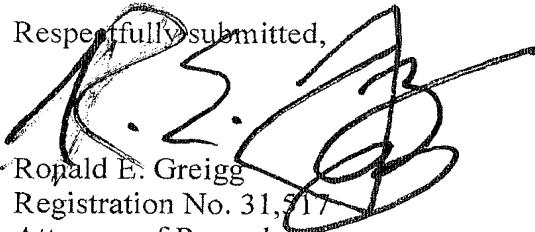
In contrast, the prior art of Fig. 1 teaches the state of the art of fuel injector design at the opposite end of a fuel injector from that concerned in the patent to Cerny, that is, at the end of the fuel injector having the conical sealing face and the cable outlet.

If one of ordinary skill in the art were to actually combine the teachings of Cerny and the prior art of Fig. 1, without the benefit of hindsight, the resulting structure would be an injector valve having one end (specifically, the end with the injector openings for fuel) constructed according to the teachings of Cerny and the opposite end having the cable outlet (17 in Fig. 1) constructed according to the teachings of Fig. 1. Thus, one of ordinary skill in the art would never have arrived at the subject matter defined in applicants' claim 43.

The present amendment raises no new issues, does not require a new search and greatly simplifies the issues on appeal. Thus, entry of the amendment is clearly appropriate.

The Commissioner is hereby authorized to charge any necessary fees in connection with this communication to Deposit Account Number 07-2100.

Entry of the amendment and allowance of the application are respectfully requested.

Respectfully submitted,

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